Learning preferences and learning styles: a study of Wessex general practice registrars

Javier Lesmes-Anel, Geoffrey Robinson and Susan Moody

SUMMARY

Background: *Experienced trainers know that individual registrars react very differently to identical learning experiences generated during the year in practice. This divergence reflects differences in registrars' learning styles. Only one study of United Kingdom (UK) general practitioners' learning styles has been undertaken. Learning style theory predicts that matching learning preference with learning style will enhance learning. This paper researches for the first time the evidence in the setting of UK general practice.*

Aim: *To determine, for the general practice registrars within the Wessex Region, the nature of their learning preferences and learning styles and correlations between them.*

Design of study: *A descriptive confidential postal questionnaire survey.*

Setting: *Fifty-seven registrars identified in the Wessex Region with a minimum experience of six months in general practice.*

Method: *The questionnaire gathered demographic data (sex, age, experience in general practice, years post-registration, and postgraduate qualifications). Learning preferences were elicited using a six-point Likert scale for learning experiences. The Honey and Mumford Learning Style Questionnaire (LSQ) elicited the registrars' learning styles. A second questionnaire was sent to non-responders.*

Results: *The response rate was 74%. Registrars report that interactive learning with feedback is preferred, but more passive learning formats remain valued. A wide range of learning style scores was found. The Honey and Mumford LSQ mean scores fell within the reflector–theorist quadrant. Evidence for correlations between learning preferences and learning styles was also found, in particular for the multiple choice question and audit components of summative assessment.*

Conclusion: *A wide range of registrar learning styles exists in Wessex, and initial correlations are described between learning preferences and learning styles as predicted by style theory. This work sets the stage for a shared understanding and use of learning style theory to enhance professional learning throughout a GP's career. More research is needed in this domain.*

Keywords: *learning; style theory; general practice registrars.*

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Introduction

LEARNING can be shown to have occurred when learners know new facts, or can use a new skill. It is a continuous lifelong process, best achieved through real life experience.[1,2]

Experienced trainers know that individual registrars react very differently to identical learning experiences generated during the year in practice. This divergence reflects differences in the registrars' learning style, defined as 'an individual's characteristic but potentially malleable way of interacting with a learning environment'.[3] It is a term widely used by educational theorists over the past 60 years and many different learning style models and instruments have been cited in the health literature.[4-7] Rayner and Riding in their comprehensive review have described and classified the developing theories of learning style.[8]

A Medline search has shown only one study of United Kingdom general practitioners (GPs) and their learning styles by Lewis and Bolden, who used the Honey and Mumford Learning Style Questionnaire (LSQ) to establish the learning styles of 63 general practice trainees.[1,9]

In their year in practice, registrars are empowered to take charge of their own critical professional learning as they evolve further away from didactic tuition to using clinical experiences for experiential adult learning. Trainers in general practice hold in part the responsibility for shaping and assessing this evolution, as they facilitate the learning process and outcome one to one with the registrar.

Honey and Mumford's LSQ extends David Kolb's concepts of experience as the source for learning, viewing learning as a circular continuous process with four distinct stages in each cycle (Figure 1).[1,10]

Honey and Mumford's four learning styles based on the four stages above are described in Box 1.[1,11,12] The LSQ scores preferences for these four constructs on two Cartesian axes, producing the dimensions of activist–theorist and pragmatist–reflector (Figure 2).

A learner may have differing strengths of preference for the four learning styles. Dominance in one area does not necessarily imply weakness in another. Using the LSQ, Lewis and Bolden report their sample of general practice trainees to be predominately reflector–pragmatists, compared with reflector–theorists for trainers and general practice tutors.[9] Their sample of doctors was partly randomised and testing was spread out over one year. No data was collected on experience in practice or other demographic variables.

As learning style theory predicts that matching learning style with learning preferences will enhance learning, Lewis and Bolden call for educational courses for GPs to have teaching styles that match participants' learning styles,

HOW THIS FITS IN

What do we know?
Learning style theory predicts that matching learning preference with learning style will enhance learning.

What does this paper add?
Interactive learning for registrars with feedback produces mostly positive experiences. Registrars have a wide range of learning styles and learning preferences. Correlations exist between learning styles and learning preferences, as predicted by style theory.

rather than the teacher's preferred style.[1,10,11] While matching learning and teaching styles has been researched extensively with conclusions for and against enhanced learning, no such research has been conducted in UK general practice on the one-to-one learning relationship between trainer and registrar.[13-17] Honey and Mumford have advocated selection of learning preferences to match an individual's style and also positively seeking and using unpreferred learning situations to develop unpreferred styles.[11] This study examines for the first time in the setting of UK general practice the nature of registrar learning preferences and learning styles and correlations between the two.

Method

A descriptive confidential postal questionnaire survey was conducted of all GP registrars within the Wessex Region with a minimum experience of six months in general practice on 1 April 1999. The Wessex Deanery identified from the summative assessment database a population of 57 such registrars. A questionnaire was designed to elicit demographic data together with the registrars' views on their learning experiences as a registrar working in general practice, and piloted on registrars from the Portsmouth day release course not eligible for the survey. Demographic data included their sex, age, experience in general practice, years post-registration, and postgraduate qualifications. Learning preferences were elicited using a six-point Likert scale for learning experiences within the training practice, day release course, and summative assessment. These questions were designed as closed questions being scored from 'very helpful' to 'very unhelpful' or 'strongly agree' to 'strongly disagree'. Examples of these questions would be 'How helpful to your learning do you find formal lectures?', and 'I find sitting in with my trainer very helpful'.

The Honey and Mumford LSQ, consisting of 80 statements, elicited the registrars' learning styles.[1] Three weeks after the initial postal survey a second questionnaire was sent to non-responders. Final non-responder details were not available to us from the Deanery to preserve issues of confidentiality. The results were anonymised, coded, and entered into a computer database and analysed using SPSS.[18]

Results

A total of 42 completed questionnaires were received from the 57 registrars: 31 in the first postal survey and 11 in the second. The overall response rate was 74%.

Demographic data

The demographic data for the 42 responders is described in Table 1.

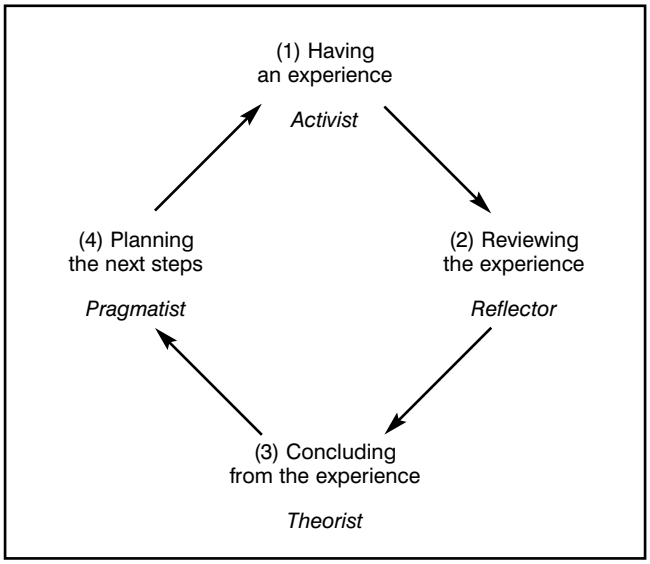

Figure 1.

Activist
Sensation seeking, impulsive, extrovert, and optimistic. Activists act first, consider consequences later, and tackle problems by brainstorming. They thrive on new challenges, but are bored with implementation.

Reflector
Cautious, methodical, and introverted. Reflectors prefer to stand back and collect data, before thorough thinking leads to a conclusion, often postponed for as long as possible, which will integrate the views of others as well as their own.

Theorist
Intellectual, rational, and objective. Theorists assimilate facts into coherent theories, analysing and synthesising until a rational conclusion emerges. They tend to be detached and prefer to maximise certainty.

Pragmatist
Expedient, realistic, and practical. Pragmatists are keen on trying out new ideas and techniques to see if they work in practice. They act confidently on practical ideas that attract them, and are impatient with ruminating discussion.

Box 1. Learning styles.

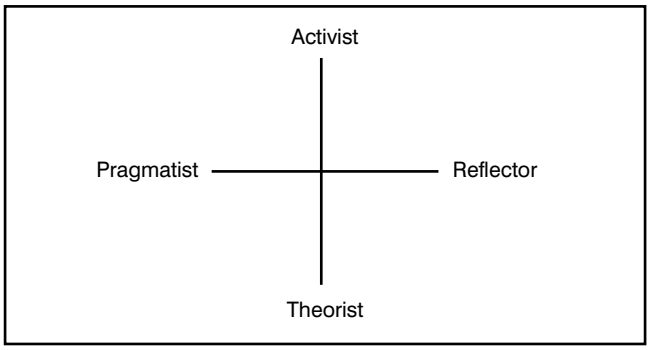

Figure 2.

Learning preferences

Table 2 contains the 42 responders' preferences for their learning experiences within the training practice, with their trainer, and at the day release course, together with their personal learning experiences and their views on the helpfulness of summative assessment for their learning. The six-point Likert scale has been collapsed into positive or negative responses.

Learning styles

The 42 completed questionnaires were scored. Figure 3 is the scattergram of activist/theorist and pragmatist/reflector scores for the 42 responders and shows a significant correlation for Wessex registrars (Spearman's ρ = -0.396, *P* = 0.009, two-tailed). A wide distribution of scores is demonstrated, with the reflector–theorist quadrant containing most responders.

The mean activist score was 8.9 (range = 1 to 19, standard deviation = 3.8), the mean theorist score was 10.3 (range = 3 to 18, standard deviation = 3.4), the mean pragmatist score was 11.1 (range = 5 to 17, standard deviation = 2.9), and the mean reflector score was 12.9 (range = 3 to 20, standard deviation = 3.7). The registrar's score on the activist/theorist dimension was determined by subtracting the theorist score from the activist score, and the pragmatist/reflector dimension score determined by subtracting the reflector score from the pragmatist score. The activist/theorist dimension mean score was -1.4 (range = 12 to -13, standard deviation = 6.0). The pragmatist/reflector dimension mean score was -1.8 (range = 8 to -15, standard deviation = 6.0).

The LSQ scores were compared with the norm table for 3500 members of the general population and calculated as showing strength of learning style preferences for each of the four constructs of activist, theorist, pragmatist, and reflector.[1] These are expressed in percentiles with the highest 30% of the scores describing very strong or strong preferences, the mid-range of 40% describing a moderate preference, and the remaining lower 30% of the scores describing low or very low preferences.

The mean activist (8.9) and reflector (12.9) scores fall within the moderate preference bands for these styles and the mean pragmatist (11.1) and theorist (10.3) scores fall within the low preference bands.

The activist scores showed 31% with a very low or low activist learning style preference, 38% with a moderate preference, and 31% with a strong or very strong preference (*n* = 42). The theorist scores showed 57.1% with a very low or low theorist learning style preference, 19.1% with a moderate preference, and 23.8% with a strong or very strong preference (*n* = 42). The pragmatist scores showed 54.8% with a very low or low pragmatist learning style preference, 33.3% with a moderate preference, and 11.9% with a strong or very strong preference (*n* = 42). The reflector scores showed 31% with a very low or low reflector learning style preference, 31% with a moderate preference, and 38% with a strong or very strong preference (*n* = 42).

Figure 4 shows the numbers of individual strong preferences for the four learning styles, with 33.3% of the responders having no strong preferences, and 4.8% having three or four strong preferences. Figure 5 similarly describes low preferences for the four learning styles, with 21.4% having no low preferences and 23.8% having three or four low preferences (*n* = 42).

Table 1. Demographic data for responders.

Characteristic		Number of complete responses
Sex		42
Male *n* (%)	15 (35.7)	
Female *n* (%)	27 (64.3)	
Mean age (years)		42
Overall	30.9 (range = 26 to 46)	
Females	29.3	
Males	33.6	
Mean general practice experience (months)	10.4 (range = 6 to 17)	42
Time commitment		42
Full time		
Male	14	
Female	23	
Part time		
Male	1	
Female	4	
Vocational training scheme		41
Independent	30	
Organised	11	
Postgraduate qualifications		40
Yes	28	
No	12	
Mean post-registration period (years)	5.42 (range = 1 to 11)	42
MRCGP examination intentions		36
Passed	1	
No plans to sit	4	
Plan to sit	3	

Table 2. Registrars' preferences for learning experiences (n = 42).

Question	Helpful (%)	Not helpful (%)	Not experienced or no response (%)
(a) Training practice			
How helpful for your learning did you find:			
Tutorials	95.2	4.8	0
Discussion of problems with your trainer	90.5	9.5	0
Practice meetings	88.1	7.1	4.8
Random case analysis	88.1	4.8	7.1
Video analysis of consultations	85.7	11.9	2.4
Practice library	69	31	0
Practice policies, guidelines and protocols	69	21.4	7.1
(b) Trainer's teaching			
How do you feel about these statements:			
When solving problems I like my trainer to make me think	92.9	7.1	0
I find sitting in with my trainer very helpful	81	19	0
I find my trainer sitting in with me very helpful	64.3	26.2	9.5
I like to have clear directions from my trainer	42.9	54.8	2.4
I would appreciate more supervision	28.6	71.4	0
I would like to see more patients	11.9	85.7	2.4
(c) Day release course			
How helpful to your learning do you find:			
Small group work	92.9	7.1	0
Problem-solving sessions	88.1	9.5	2.4
Video analysis of your consultations	76.2	14.3	9.5
Formal lectures	71.4	23.8	4.8
Objective structured clinical examinations	50	9.5	40.5
(d) Personal learning experiences			
How do you feel about these statements?			
I welcome personalised feedback and appraisals	97.6	2.4	0
I like 'hands on' learning sessions	95.2	2.4	2.4
I find study groups helpful to my learning	83.3	7.1	9.5
Learning should be a self-directed activity	78.6	21.4	0
I find critical reading useful for learning	76.2	23.8	0
I feel more comfortable following guidelines and protocols	69	31	0
Learning is better achieved through reading	42.9	57.1	0
(e) Summative assessment			
How helpful for your learning do you find:			
The video component	83.3	16.7	0
The trainer's report	61.9	38.1	0
Multiple choice questionnaires	50	50	0
The audit	40.5	59.5	0

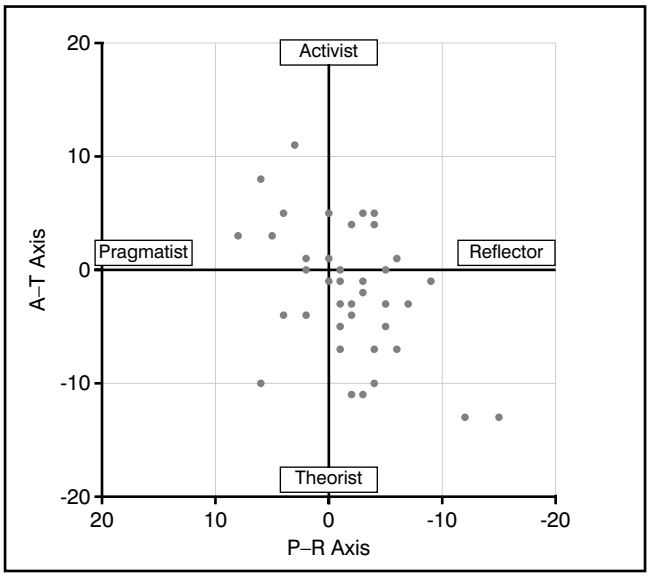

Figure 3. Scattergram of activist–theorist and pragmatist–reflector scores. Spearman's ρ = -0.396, P = 0.009 (two-tailed).

Correlations between learning preferences and learning styles

Spearman rank correlations for the learning style scores, on both the four constructs of activist, theorist, pragmatist, and reflector and two dimensions of activist/theorist and pragmatist/reflector, were calculated against the preference rating for each learning preference on the six-point Likert scale. Of the 29 learning preferences described in Table 2, ten produced significant correlations and are presented in Table 3.

Discussion

Interpretation of these findings is limited as a postal survey can only report subjective data on learning preferences. Despite the encouraging 74% response rate, further limitations arise from lack of data on non-responders to preserve confidentiality and from the moderate numbers involved in this exploratory work. However, the data does report the views of the Wessex registrars in an area of relevant and localised research.[19]

The first finding is that interactive learning with feedback provides mostly positive experiences. Registrars are looking

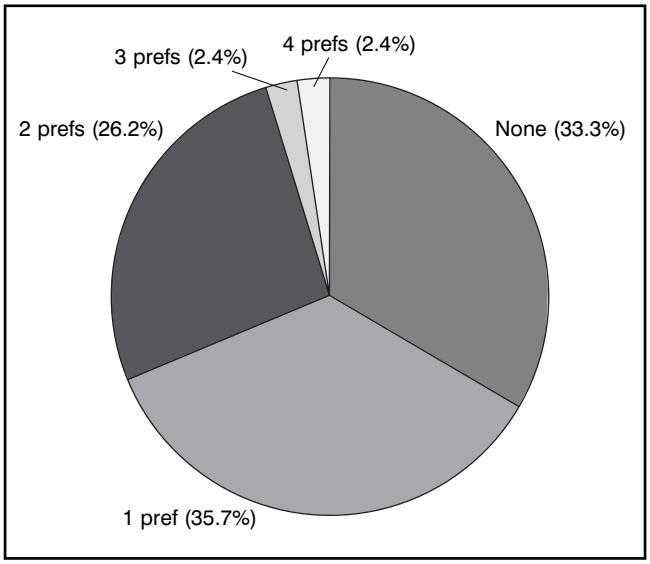

Figure 4. The numbers of individual strong learning style preferences for the 42 registrars (%).

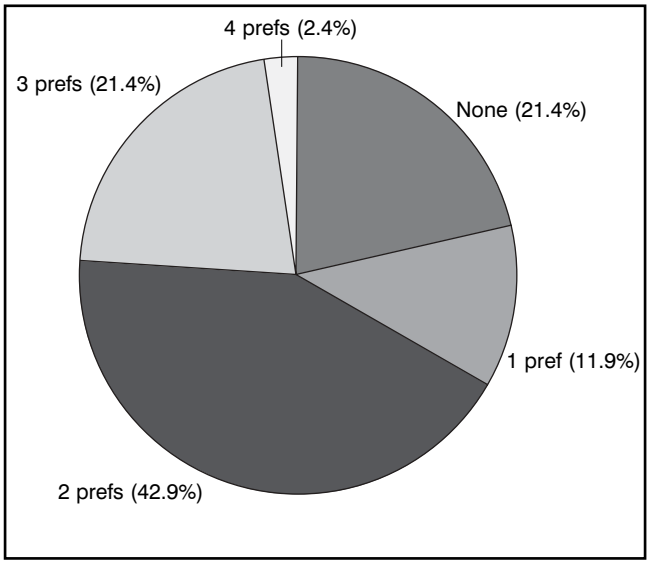

Figure 5. The numbers of individual low learning style preferences for the 42 registrars (%).

Table 3. Spearman's rank correlations between learning preferences and learning styles.

Learning preference	Activist score	Theorist score	Pragmatist score	Reflector score	Activist/Theorist score	Pragmatist/Reflector score
Practice library	-0.342[b]				-0.364[b]	
Practice policies, guidelines and protocols				0.376[b]		-0.476[a]
Discussion of problems with your trainer				0.387[b]	-0.396[a]	-0.396[a]
I like to have clear directions from my trainer		0.336[b]		0.519[a]		-0.396[b]
When solving problems I like my trainer to make me think			0.387[b]			
I like 'hands on' learning sessions			0.334[b]			
Learning should be a self-directed activity			0.362[b]			
I feel more comfortable following guidelines and protocols	-0.399[a]			0.351[b]	-0.424[a]	-0.424[a]
Multiple choice questions				0.349[b]		-0.507[a]
Audit	-0.306[b]			0.314[b]		-0.408[a]

[a]Correlation is significant at the 0.01 level (two-tailed). [b]Correlation is significant at the 0.05 level (two-tailed).

to trainers to encourage independent critical thinking when solving problems, and a high number report finding interaction with their trainer helpful. The majority of registrars feel that learning should be a self-directed activity, and are not looking for more supervision or an increased clinical load. Interactive learning at the day release course is rated highly. More passive learning is valued, however, with formal lectures and practice libraries having a strong following and a substantial minority learning from reading. The individual views reported here may be more honest than those reported in groups and so subject to peer pressure. It is difficult to draw conclusions about objective structured clinical examinations when 40.5% of registrars have yet to experience this format.

Summative assessment became mandatory in September 1996, adding significantly to the demands on time within the practice year. While by definition summative assessment is not designed to be of inherent educational value, experienced trainers appreciate that it can intrude into time available for education within a very crowded practice year.[20] Given this large amount of time required by summative assessment it is sensible to use it for learning, rather than let it displace other learning opportunities and be viewed simply as a hurdle to clear. All of the registrars in this study report experiencing summative assessment, although no experience yet of video analysis of consultations is reported after six months of general practice by one registrar within the training practice and four registrars within the day

release course. The video component of summative assessment is viewed by most as helpful for learning, with a smaller majority viewing positively the trainer's report. Multiple choice questions divide opinion equally and only a minority (40.5%) report the audit component as helpful with their learning. This may reflect prior learning of audit skills, unappreciation of relevance, or a missed learning opportunity.

The second finding is that the mean registrar learning style scores fall within the reflector–theorist quadrant, as did the trainees in Lewis and Boldens' study (activist–theorist score = -1.4, compared with -0.3 for Lewis and Bolden and, similarly, pragmatist–reflector score of -1.8 compared with -0.74).[9] Specific occupational norms for UK medical practitioners have yet to be constructed. The UK general norms place the mean scores for both studies within low preferences for pragmatist and theorist styles, and moderate preferences for activist and reflector styles. However, there are wide ranges of learning styles across the registrars. For the individual registrar and trainer learning team it is more relevant to determine and understand their own learning styles and preferences. To enhance adult learning, consideration should be given by the trainer to initially using the registrar's strengths and then encouraging development of lower preference styles. The best learning from experience needs strong preferences for all four styles, and uses style flexing to meet the diverse environment of general practice. Honey and Mumford describe a practical method for this.[11] Trainers will face very contrasting challenges for registrars with differing strengths and combinations of learning style preferences but all will have clear learning and development needs. Day release courses need to consider how their teaching style matches their registrars' learning style preferences. There is a need to develop style repertoires for teaching and learning, so all style combinations are included.

The third finding is that correlations exist between learning preferences and styles. These should be viewed with caution owing to the large number (174) of correlations generated from the six learning style scores and 29 learning style preferences. Some seemingly significant correlations may have arisen by chance. However, theory would mostly predict the findings in Table 3. A registrar with high reflector style preference will prefer multiple choice questions and audit, while a high activist score would predict a low preference for audit. This would be of relevance to the trainer when deciding how to use summative assessment to enhance a registrar's learning in addition to guiding them successfully through the assessment process.

In conclusion, there are wide ranges of learning preferences and styles within Wessex registrars. Initial correlations are described between learning preferences and learning styles as predicted by style theory. Effective professional development and performance increasingly rely on the ability to learn, as the pace of change in general practice escalates. Learning style preferences continue through the lifelong learning inherent in a GP's career and merit development into a repertoire of four strong style preferences, applicable from undergraduate learning to continuing professional development, revalidation and clinical governance. This work sets the stage for a shared understanding and use of learning style theory to enhance professional learning. More research is needed within this domain, particularly on occupational norms for medical practitioners, educators' understanding and use of style theory, the effect of style matching, and style repertoire development.

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